

in which the emergency special assessment was imposed.

[74 FR 9341, Mar. 3, 2009]

# APPENDIX A TO SUBPART A OF PART 327—METHOD TO DERIVE PRICING MULTIPLIERS AND UNIFORM AMOUNT

## I. INTRODUCTION

The uniform amount and pricing multipliers are derived from:

- A model (the Statistical Model) that estimates the probability that a Risk Category I institution will be downgraded to a composite CAMELS rating of 3 or worse within one year;
- Minimum and maximum downgrade probability cutoff values, based on data from June 30, 2008, that will determine which small institutions will be charged the minimum and maximum initial base assessment rates applicable to Risk Category I;
- The minimum initial base assessment rate for Risk Category I, equal to 12 basis points, and
- The maximum initial base assessment rate for Risk Category I, which is four basis points higher than the minimum rate.

## II. THE STATISTICAL MODEL

The Statistical Model is defined in equations 1 and 3 below.

### Equation 1

$\text{Downgrade}(0,1)_{i,t} = \beta_0 + \beta_1 (\text{Tier 1 Leverage Ratio}_t) + \beta_2 (\text{Loans past due 30 to 89 days ratio}_{i,t}) + \beta_3 (\text{Nonperforming asset ratio}_{i,t}) + \beta_4 (\text{Net loan charge-off ratio}_{i,t}) + \beta_5 (\text{Net income before taxes ratio}_{i,t}) + \beta_6 (\text{Adjusted brokered deposit ratio}_{i,t}) + \beta_7 (\text{Weighted av-$

erage CAMELS component rating<sub>i,t</sub>) where  $\text{Downgrade}(0,1)_{i,t}$  (the dependent variable—the event being explained) is the incidence of downgrade from a composite rating of 1 or 2 to a rating of 3 or worse during an on-site examination for an institution  $i$  between 3 and 12 months after time  $t$ . Time  $t$  is the end of a year within the multi-year period over which the model was estimated (as explained below). The dependent variable takes a value of 1 if a downgrade occurs and 0 if it does not.

The explanatory variables (regressors) in the model are six financial ratios and a weighted average of the “C,” “A,” “M,” “E” and “L” component ratings. The six financial ratios included in the model are:

- Tier 1 leverage ratio
- Loans past due 30–89 days/Gross assets
- Nonperforming assets/Gross assets
- Net loan charge-offs/Gross assets
- Net income before taxes/Risk-weighted assets
- Brokered deposits/domestic deposits above the 10 percent threshold, adjusted for the asset growth rate factor

Table A.1 defines these six ratios along with the weighted average of CAMELS component ratings. The adjusted brokered deposit ratio ( $B_{i,T}$ ) is calculated by multiplying the ratio of brokered deposits to domestic deposits above the 10 percent threshold by an asset growth rate factor that ranges from 0 to 1 as shown in Equation 2 below. The asset growth rate factor ( $A_{i,T}$ ) is calculated by subtracting 0.4 from the four-year cumulative gross asset growth rate (expressed as a number rather than as a percentage), adjusted for mergers and acquisitions, and multiplying the remainder by  $\frac{10}{3}$ . The factor cannot be less than 0 or greater than 1.

### Equation 2

$$B_{i,T} = \left( \frac{\text{Brokered Deposits}_{i,T}}{\text{Domestic Deposits}_{i,T}} - 0.10 \right) * A_{i,T}$$

$$\text{where } A_{i,T} = \left[ \left( \frac{\text{GrossAssets}_{i,T} - \text{GrossAssets}_{i,T-4}}{\text{GrossAssets}_{i,T-4}} - 0.4 \right) * \frac{10}{3} \right], \text{ subject to } 0 \leq A_{i,T} \leq 1 \text{ and } B_{i,T} \geq 0.$$

The component rating for sensitivity to market risk (the “S” rating) is not available for years prior to 1997. As a result, and as described in Table A.1, the Statistical Model is estimated using a weighted average of five component ratings excluding the “S” component. Delinquency and non-accrual data on government guaranteed loans are not available before 1993 for Call Report filers and before the third quarter of 2005 for TFR filers. As a result, and as also described in Table

A.1, the Statistical Model is estimated without deducting delinquent or past-due government guaranteed loans from either the loans past due 30–89 days to gross assets ratio or the nonperforming assets to gross assets ratio. Reciprocal deposits are not presently reported in the Call Report or TFR. As a result, and as also described in Table A.1, the Statistical Model is estimated without deducting reciprocal deposits from brokered

deposits in determining the adjusted brokered deposit ratio.

TABLE A.1—DEFINITIONS OF REGRESSORS

Regressor	Description
Tier 1 Leverage Ratio (%) .....	Tier 1 capital for Prompt Corrective Action (PCA) divided by adjusted average assets based on the definition for prompt corrective action.
Loans Past Due 30–89 Days/Gross Assets (%) ....	Total loans and lease financing receivables past due 30 through 89 days and still accruing interest divided by gross assets (gross assets equal total assets plus allowance for loan and lease financing receivable losses and allocated transfer risk).
Nonperforming Assets/Gross Assets (%) .....	Sum of total loans and lease financing receivables past due 90 or more days and still accruing interest, total nonaccrual loans and lease financing receivables, and other real estate owned divided by gross assets.
Net Loan Charge-Offs/Gross Assets (%) .....	Total charged-off loans and lease financing receivables debited to the allowance for loan and lease losses less total recoveries credited to the allowance for loan and lease losses for the most recent twelve months divided by gross assets.
Net Income before Taxes/Risk-Weighted Assets (%) .....	Income before income taxes and extraordinary items and other adjustments for the most recent twelve months divided by risk-weighted assets.
Adjusted brokered deposit ratio (%) .....	Brokered deposits divided by domestic deposits less 0.10 multiplied by the asset growth rate factor (which is the term $A_{i,T}$ as defined in equation 2 above) that ranges between 0 and 1.
Weighted Average of C, A, M, E and L Component Ratings.	The weighted sum of the “C,” “A,” “M,” “E” and “L” CAMELS components, with weights of 28 percent each for the “C” and “M” components, 22 percent for the “A” component, and 11 percent each for the “E” and “L” components. (For the regression, the “S” component is omitted.)

The financial variable regressors used to estimate the downgrade probabilities are obtained from quarterly reports of condition (Reports of Condition and Income and Thrift Financial Reports). The weighted average of the “C,” “A,” “M,” “E” and “L” component ratings regressor is based on component ratings obtained from the most recent bank examination conducted within 24 months before the date of the report of condition.

The Statistical Model uses ordinary least squares (OLS) regression to estimate downgrade probabilities. The model is estimated with data from a multi-year period (as explained below) for all institutions in Risk Category I, except for institutions established within five years before the date of the report of condition.

The OLS regression estimates coefficients,  $\beta_j$  for a given regressor  $j$  and a constant amount,  $\beta_0$ , as specified in equation 1. As shown in equation 3 below, these coefficients are multiplied by values of risk measures at time  $T$ , which is the date of the report of condition corresponding to the end of the quarter for which the assessment rate is computed. The sum of the products is then added to the constant amount to produce an estimated probability,  $d_{i,T}$ , that an institution will be downgraded to 3 or worse within 3 to 12 months from time  $T$ .

The risk measures are financial ratios as defined in Table A.1, except that: (1) The loans past due 30 to 89 days ratio and the nonperforming asset ratio are adjusted to exclude the maximum amount recoverable from the U.S. Government, its agencies or government-sponsored agencies, under guar-

antee or insurance provisions; (2) the weighted sum of six CAMELS component ratings is used, with weights of 25 percent each for the “C” and “M” components, 20 percent for the “A” component, and 10 percent each for the “E,” “L,” and “S” components; and (3) reciprocal deposits are deducted from brokered deposits in determining the adjusted brokered deposit ratio.

#### Equation 3

$$d_{i,T} = \beta_0 + \beta_1 (\text{Tier 1 Leverage Ratio}_{i,T}) + \beta_2 (\text{Loans past due 30 to 89 days ratio}_{i,T}) + \beta_3 (\text{Nonperforming asset ratio}_{i,T}) + \beta_4 (\text{Net loan charge-off ratio}_{i,T}) + \beta_5 (\text{Net income before taxes ratio}_{i,T}) + \beta_6 (\text{Adjusted brokered deposit ratio}_{i,T}) + \beta_7 (\text{Weighted average CAMELS component rating}_{i,T})$$

#### III. MINIMUM AND MAXIMUM DOWNGRADE PROBABILITY CUTOFF VALUES

The pricing multipliers are also determined by minimum and maximum downgrade probability cutoff values, which will be computed as follows:

- The minimum downgrade probability cutoff value will be the maximum downgrade probability among the twenty-five percent of all small insured institutions in Risk Category I (excluding new institutions) with the lowest estimated downgrade probabilities, computed using values of the risk measures

as of June 30, 2008.<sup>12</sup> The minimum downgrade probability cutoff value is 0.0182.

- The maximum downgrade probability cutoff value will be the minimum downgrade probability among the fifteen percent of all small insured institutions in Risk Category I (excluding new institutions) with the highest estimated downgrade probabilities, computed using values of the risk measures as of June 30, 2008. The maximum downgrade probability cutoff value is 0.1506.

#### IV. DERIVATION OF UNIFORM AMOUNT AND PRICING MULTIPLIERS

The uniform amount and pricing multipliers used to compute the annual base assessment rate in basis points,  $P_{iT}$ , for any such institution  $i$  at a given time  $T$  will be determined from the Statistical Model, the minimum and maximum downgrade probability cutoff values, and minimum and maximum initial base assessment rates in Risk Category I as follows:

#### Equation 4

$$P_{iT} = \alpha_0 + \alpha_1 * d_{iT} \text{ subject to } Min \leq P_{iT} \leq Min + 4$$

where  $\alpha_0$  and  $\alpha_1$  are a constant term and a scale factor used to convert  $d_{iT}$  (the estimated downgrade probability for institution  $i$  at a given time  $T$  from the Statistical Model) to an assessment rate, respectively, and  $Min$  is the minimum initial base assessment rate expressed in basis points. ( $P_{iT}$  is expressed as an annual rate, but the actual rate applied in any quarter will be  $P_{iT}/4$ .) The maximum initial base assessment rate is 4 basis points above the minimum ( $Min + 4$ )

Solving equation 4 for minimum and maximum initial base assessment rates simultaneously,

$$Min = \alpha_0 + \alpha_1 * 0.0182 \text{ and } Min + 4 = \alpha_0 + \alpha_1 * 0.1506$$

where 0.0182 is the minimum downgrade probability cutoff value and 0.1506 is the maximum downgrade probability cutoff value, results in values for the constant amount,  $\alpha_0$  and the scale factor,  $\alpha_1$ :

#### Equation 5

$$\alpha_0 = Min - \frac{4 * 0.0182}{(0.1506 - 0.0182)} = Min - 0.550$$

and Equation 6

$$\alpha_1 = \frac{4}{(0.1506 - 0.0182)} = 30.211$$

Substituting equations 3, 5 and 6 into equation 4 produces an annual initial base assessment rate for institution  $i$  at time  $T$ ,  $P_{iT}$ , in terms of the uniform amount, the pricing multipliers and the ratios and weighted average CAMELS component rating referred to in 12 CFR 327.9(d)(2)(i):

#### Equation 7

$$P_{iT} = [(Min - 0.550) + 30.211 * \beta_0] + 30.211 * [\beta_1 (\text{Tier 1 Leverage Ratio}_T) + 30.211 * [\beta_2 (\text{Loans past due 30 to 89 days ratio}_T) + 30.211 * [\beta_3 (\text{Nonperforming asset ratio}_T) + 30.211 * [\beta_4 (\text{Net loan charge-off ratio}_T) + 30.211 * [\beta_5 (\text{Net income before taxes ratio}_T) + 30.211 * [\beta_6 (\text{Adjusted brokered deposit$$

ratio<sub>T</sub>)] + 30.211 \* [ $\beta_7$  (Weighted average CAMELS component rating<sub>T</sub>)]

again subject to  $Min \leq P_{iT} \leq Min + 4$

where  $(Min - 0.550) + 30.211 * \beta_0$  equals the uniform amount,  $30.211 * \beta_j$  is a pricing multiplier for the associated risk measure  $j$ , and  $T$  is the date of the report of condition corresponding to the end of the quarter for which the assessment rate is computed.

#### V. UPDATING THE STATISTICAL MODEL, UNIFORM AMOUNT, AND PRICING MULTIPLIERS

The initial Statistical Model is estimated using year-end financial ratios and the weighted average of the “C,” “A,” “M,” “E” and “L” component ratings over the 1988 to 2006 period and downgrade data from the 1989 to 2007 period. The FDIC may, from time to time, but no more frequently than annually, re-estimate the Statistical Model with updated data and publish a new formula for determining initial base assessment rates—equation 7—based on updated uniform

<sup>1</sup>As used in this context, a “new institution” means an institution that has been chartered as a bank or thrift for less than five years.

<sup>2</sup>For purposes of calculating the minimum and maximum downgrade probability cutoff values, institutions that have less than \$100,000 in domestic deposits are assumed to have no brokered deposits.

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amounts and pricing multipliers. However, the minimum and maximum downgrade probability cutoff values will not change without additional notice-and-comment rulemaking. The period covered by the anal-

ysis will be lengthened by one year each year; however, from time to time, the FDIC may drop some earlier years from its analysis.

### VI. DESCRIPTION OF SCORECARD MEASURES

Tier 1 Leverage Ratio .....	Tier 1 capital for Prompt Corrective Action (PCA) divided by adjusted average assets based on the definition for prompt corrective action.
Concentration Measure for Large Insured depository institutions (excluding Highly Complex Institutions).	The concentration score for large institutions is the higher of the following two scores:
(1) Higher-Risk Assets/Tier 1 Capital and Reserves.	Sum of construction and land development (C&D) loans (funded and unfunded), leveraged loans (funded and unfunded), nontraditional mortgages, and subprime consumer loans divided by Tier 1 capital and reserves. See Appendix C for the detailed description of the ratio.
(2) Growth-Adjusted Portfolio Concentrations ...	<p>The measure is calculated in the following steps:</p> <ol style="list-style-type: none"> <li>(1) Concentration levels (as a ratio to Tier 1 capital and reserves) are calculated for each broad portfolio category: <ul style="list-style-type: none"> <li>• C&amp;D,</li> <li>• Other commercial real estate loans,</li> <li>• First lien residential mortgages (including non-agency residential mortgage-backed securities),</li> <li>• Closed-end junior liens and home equity lines of credit (HELOCs),</li> <li>• Commercial and industrial loans,</li> <li>• Credit card loans, and</li> <li>• Other consumer loans.</li> </ul> </li> <li>(2) Risk weights are assigned to each loan category based on historical loss rates.</li> <li>(3) Concentration levels are multiplied by risk weights and squared to produce a risk-adjusted concentration ratio for each portfolio.</li> <li>(4) Three-year merger-adjusted portfolio growth rates are then scaled to a growth factor of 1 to 1.2 where a 3-year cumulative growth rate of 20 percent or less equals a factor of 1 and a growth rate of 80 percent or greater equals a factor of 1.2. If three years of data are not available, a growth factor of 1 will be assigned.</li> <li>(5) The risk-adjusted concentration ratio for each portfolio is multiplied by the growth factor and resulting values are summed.</li> </ol> <p>See Appendix C for the detailed description of the measure.</p>
Concentration Measure for Highly Complex Institutions.	Concentration score for highly complex institutions is the highest of the following three scores:

(1) Higher-Risk Assets/Tier 1 Capital and Reserves.	Sum of C&D loans (funded and unfunded), leveraged loans (funded and unfunded), non-traditional mortgages, and subprime consumer loans divided by Tier 1 capital and reserves. See Appendix C for the detailed description of the measure.
(2) Top 20 Counterparty Exposure/Tier 1 Capital and Reserves.	Sum of the total exposure amount to the largest 20 counterparties (in terms of exposure amount) divided by Tier 1 capital and reserves. Counterparty exposure is equal to the sum of Exposure at Default (EAD) associated with derivatives trading and Securities Financing Transactions (SFTs) and the gross lending exposure (including all unfunded commitments) for each counterparty or borrower at the consolidated entity level. <sup>1</sup>
(3) Largest Counterparty Exposure/Tier 1 Capital and Reserves.	The amount of exposure to the largest counterparty (in terms of exposure amount) divided by Tier 1 capital and reserves. Counterparty exposure is equal to the sum of Exposure at Default (EAD) associated with derivatives trading and Securities Financing Transactions (SFTs) and the gross lending exposure (including all unfunded commitments) for each counterparty or borrower at the consolidated entity level.
Core Earnings/Average Quarter-End Total Assets.	Core earnings are defined as net income less extraordinary items and tax-adjusted realized gains and losses on available-for-sale (AFS) and held-to-maturity (HTM) securities, adjusted for mergers. The ratio takes a four-quarter sum of merger-adjusted core earnings and divides it by an average of five quarter-end total assets (most recent and four prior quarters). If four quarters of data on core earnings are not available, data for quarters that are available will be added and annualized. If five quarters of data on total assets are not available, data for quarters that are available will be averaged.
Credit Quality Measure .....	The credit quality score is the higher of the following two scores:
(1) Criticized and Classified Items/Tier 1 Capital and Reserves.	Sum of criticized and classified items divided by the sum of Tier 1 capital and reserves. Criticized and classified items include items an institution or its primary federal regulator have graded “Special Mention” or worse and include retail items under Uniform Retail Classification Guidelines, securities, funded and unfunded loans, other real estate owned (ORE), other assets, and marked-to-market counterparty positions, less credit valuation adjustments. <sup>2</sup> Criticized and classified items exclude loans and securities in trading books, and the amount recoverable from the U.S. government, its agencies, or government-sponsored agencies, under guarantee or insurance provisions.

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(2) Underperforming Assets/Tier 1 Capital and Reserves.	Sum of loans that are 30 days or more past due and still accruing interest, nonaccrual loans, restructured loans (including restructured 1–4 family loans), and ORE, excluding the maximum amount recoverable from the U.S. government, its agencies, or government-sponsored agencies, under guarantee or insurance provisions, divided by a sum of Tier 1 capital and reserves.
Core Deposits/Total Liabilities .....	Total domestic deposits excluding brokered deposits and uninsured non-brokered time deposits divided by total liabilities.
Balance Sheet Liquidity Ratio .....	Sum of cash and balances due from depository institutions, federal funds sold and securities purchased under agreements to resell, and the market value of available for sale and held to maturity agency securities (excludes agency mortgage-backed securities but includes all other agency securities issued by the U.S. Treasury, U.S. government agencies, and U.S. government sponsored enterprises) divided by the sum of federal funds purchased and repurchase agreements, other borrowings (including FHLB) with a remaining maturity of one year or less, 5 percent of insured domestic deposits, and 10 percent of uninsured domestic and foreign deposits. <sup>3</sup>
Potential Losses/Total Domestic Deposits (Loss Severity Measure).	Potential losses to the DIF in the event of failure divided by total domestic deposits. Appendix D describes the calculation of the loss severity measure in detail.
Market Risk Measure for Highly Complex Institutions.	The market risk score is a weighted average of the following three scores:
(1) Trading Revenue Volatility/Tier 1 Capital ....	Trailing 4-quarter standard deviation of quarterly trading revenue (merger-adjusted) divided by Tier 1 capital.
(2) Market Risk Capital/Tier 1 Capital .....	Market risk capital divided by Tier 1 capital. <sup>4</sup>
(3) Level 3 Trading Assets/Tier 1 Capital .....	Level 3 trading assets divided by Tier 1 capital.
Average Short-term Funding/Average Total Assets.	Quarterly average of federal funds purchased and repurchase agreements divided by the quarterly average of total assets as reported on Schedule RC–K of the Call Reports.

<sup>1</sup>EAD and SFTs are defined and described in the compilation issued by the Basel Committee on Banking Supervision in its June 2006 document, "International Convergence of Capital Measurement and Capital Standards." The definitions are described in detail in Annex 4 of the document. Any updates to the Basel II capital treatment of counterparty credit risk would be implemented as they are adopted. <http://www.bis.org/publ/bcbs128.pdf>.

<sup>2</sup>A marked-to-market counterparty position is equal to the sum of the net marked-to-market derivative exposures for each counterparty. The net marked-to-market derivative exposure equals the sum of all positive marked-to-market exposures net of legally enforceable netting provisions and net of all collateral held under a legally enforceable CSA plus any exposure where excess collateral has been posted to the counterparty. For purposes of the Criticized and Classified Items/Tier 1 Capital and Reserves definition a marked-to-market counterparty position less any credit valuation adjustment can never be less than zero.

<sup>3</sup>Deposit runoff rates for the balance sheet liquidity ratio reflect changes issued by the Basel Committee on Banking Supervision in its December 2010 document, "Basel III: International Framework for liquidity risk measurement, standards, and monitoring," <http://www.bis.org/publ/bcbs188.pdf>.

<sup>4</sup>Market risk capital is defined in Appendix C of Part 325 of the FDIC Rules and Regulations., <http://www.fdic.gov/regulations/laws/rules/2000-4800.html#fdic2000appendixctopart325>.

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